SEXUAL AND NONSEXUAL GENERATIONS.

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Recently a number of ideas have been put forward by various authors as to what is a sexual or nonsexual individual or generation. To the writer the case seems to be a matter of definition. The confusion appears to arise not so much in a misapprehension of the facts involved as in the extension of the meaning of the terms used. But in this case individuals and generations should be judged by what they produce.

A sexual generation is a gamete-producing generation. Any individual, therefore, producing cells which normally are to conjugate possesses sexuality provided the conjugation results in reproduction. If there is a differentiation of sex, the individual which produces female gametes directly is a female individual, and the individual which produces male gametes directly is a male individual. The gametes or male and female cells may be produced with or without a preceding reduction division, for the sexual generation may be either an "x" or a "$2x$" generation.

A nonsexual generation is a spore-producing generation, the spores being non-conjugating reproductive cells. The nonsexual generation may also be either an "x" or a "$2x$" generation. Sex terms are, of course, not to be applied to nonsexual generations or individuals.

An alteration of generations may be antithetic having an "x" gametophyte and a "$2x$" sporophyte. And certainly the generation which produces the sexual cells is to be called the sexual generation and the one producing the nonsexual spores the nonsexual generation. So in the higher as well as in the lower plants the gametophyte is the sexual generation and the sporophyte the nonsexual. An alternation of generations need not be antithetic. But both generations may have the "x" number of chromosomes. In such forms as Oedogonium and Coleochaete, for intsance, where the $2x$ number of chromosomes appears to be only in the zygote, the organism coming through reduction from the zygote is still the sporophyte and nonsexual generation for the reason that it finally produces nonsexual spores. It is possible that there are "$2x$," sporophyte generations producing their spores without reduction which would then occur before the formation of the gametes and we would then have an alternation of generations with a "$2x$" gametophyte and a "$2x$" sporophyte. Here again the gametophyte is the sexual and the sporophyte the nonsexual generation. In other words, sexual and nonsexual individuals or gametophytes and sporophytes are not determined by an x number or a $2x$ number of chromosomes but by the fact that the first produce gametes and the second nonsexual spores.